



Amendment Under 37 C.F.R. § 1.111  
U.S. Application No. 10/506,803

### **AMENDMENTS TO THE SPECIFICATION**

**Please replace paragraph no. 5, page 1, with the following amended paragraph:**

The implant of the device according to this invention is comprised of a filament composite material- and said pedicle screws or hooks are made of a material harder than said implant. The implant provides a surface that has more friction than a titanium implant. If the implant is a plate having a longitudinal slot, the plate is placed between a nut and an upper surface of a pedicle screw. The plate can be squeezed and locked into position because of the squeezing and the increased friction between titanium and the filament composite material. When all members are titanium, the required position is not always available and indentations are often provided along the slot.

**Please replace first full paragraph no. 1, page 2, with the following amended paragraph:**

Fixation systems manufactured from metals such as titanium alloy and stainless steel confound postoperative radiologic assessments because they are radiopac and can produce ~~artefact..~~ artifact. The use of an implant comprised of a fiber reinforced polymer composite permits better diagnostic assessment of soft tissue and bone by normal radiographic methods.

**Please replace paragraph no. 7, page 3, with the following amended paragraph:**

FIG. ~~40~~ and 10 and 11 overall views showing rods or rails connecting two vertebrae of a spinal cord;

**Please replace paragraph no. 11, page 3, with the following amended paragraph:**

The plates 1 and 1' as well as rods 30 and rails 17 are manufactured from a composite material composed of long filaments or fibers 18 and 19 encapsulated in a matrix 4 as shown in FIG. 13. The filaments or fibers 18 and 19 are preferably long carbon filaments and the matrix is preferably a polymer. Preferably the carbon filaments or fibers 18 and 19 are encapsulated in the polymer polyether-ketoneetherketoneketone (PEMKK). PEKEKK is a known biocompatible polymer. Another possible polymer is polyetheretherketone (PEEK). PFKEKK is preferred to PEEK because of its greater physical and chemical resistance properties. These characteristics

impart greater stability to the plates 1 and 1', rods 30 and rails 17 or other connecting parts during a long-term implantation.

**Please replace first full paragraph no. 1, page 4, with the following amended paragraph:**

FIGS. 4, 7 and 8 disclose a pedical plate fixation systems 5 and 5' comprising a plate 1', two bone screws 6 and two nuts 7. The screws 6 and the nuts 7 are manufactured from steel or medical grade titanium alloy. Bone screws 6 are common in the orthopedic arts. The screws 6 are provided with bone engaging threads 6a. and at its other end a screw segment 6b with a conventional thread. The thread 6a flairs outwardly to an enlarged portion 6c. The enlarged portions 6c having a width greater than the width of the slope 2. The screw segment 6b extending outwardly from the enlarged portion 6c and extending through the slot 2. The nut 7 is received by the screw segment 6b, whereby the plate 1' can be grasped between the enlarged portion 6c and the nut 7 to tightly secure the plate 1 by threading the nut 7 toward the enlarged portion 6c.

**Please replace paragraph no. 2, page 5, with the following amended paragraph:**

As already mentioned, the implant according to this invention can also be a rod 12 as disclosed in FIGS. 10 and 11 or a rail according to FIG. 12 and 13. Two connectors 13 include two clamping members 14, connecting pedicle screws 15 to said rods 12. The rods 12 and rails are made from the same material as the plates 1 and 1' and the filaments encapsulated in the matrix are preferably oriented in an axial direction. A rail 17 with a rectangular cross section as shown in FIG. 12 and 13 is more stable to rotation than a rod.

**Please replace paragraph no. 3, page 5, with the following amended paragraph:**

Another advantage of implants manufactured from a carbon filament composite material is that its strength, flexibility and hardness can be varied by changing the ratio of filaments to plastic. It has been found, that "bone growth" is enhanced when it is under a certain degree of physiological stress. Thus, it will be desirable to select a composite ratio for the plate to gain the required degree of stiffness without ~~searifying~~ sacrificing any strength. The ratio of filaments to plastic is preferably higher than 40% (weight) and more preferably higher than 60% (weight).